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## CIRM Bridges 2.0: Training the Next Generation of Stem Cell Scientists

### Grant Award Details

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CIRM Bridges 2.0: Training the Next Generation of Stem Cell Scientists

**Grant Type:** Bridges II

**Grant Number:** EDUC2-08391

**Investigator:**

**Name:** Lily Chen

**Institution:** San Francisco State University

**Type:** PI

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**Award Value:** \$2,997,402

**Status:** Active

### Grant Application Details

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**Application Title:** CIRM Bridges 2.0: Training the Next Generation of Stem Cell Scientists

**Public Abstract:**

We are a large, urban university serving a highly diverse student population. Our proposed program would support 10 master's-level trainees annually from two different master's programs in Biology: a Masters of Science in Cell and Molecular Biology with an emphasis in Stem Cell Biology (the "MS program") and a Professional Science Masters with a concentration in Stem Cell Science (the "PSM program"). The PSM program provides additional course work in business and is tailored towards students interested in pursuing a position in the biotechnology sector upon graduation. In the first year of the program, CIRM Bridges trainees take core courses to build a strong foundation in stem cell science. In addition, two additional graduate courses that are complementary to the CIRM Bridges 2.0 mission will be included as part of this curriculum; "Careers in Life Sciences", which will help guide students in entering the Life Sciences job market and "Biomedical Product Development & Regulations", which provides students with an understanding of the process involved in product development with a special focus on stem cell therapies. After completing the first-year course work, students will participate in a week-long intensive Stem Cell Laboratory course taught by faculty at one of the host sites where they will learn to propagate, maintain, and manipulate human stem cells. By the second year, all of the CIRM Bridges trainees will have joined a stem cell research lab at one of our host institutions or affiliated stem cell companies. All CIRM trainees will conduct research using human stem cells. At the end of their second year of training, trainees will complete a final master project report written in the form of a manuscript as well as an oral thesis defense. This effective training has successfully led to 29 publications by CIRM Bridges trainees in peer-reviewed journals. Mentoring and professional development are an integral part of the CIRM Bridges program. CIRM students will attend monthly meetings with the Program Director (PD) to cover a range of topics as well as meet alumni, industry and academic stem cell scientists. Students will also gain a broader introduction to the importance and application of stem cell research from guest speakers, including members of various patient advocate groups. The PD and Program Associate will meet regularly with the students and their research mentors to provide continuity of programming and ensure that students thrive in their internships. Thus, the proposed program aims to make important contributions to the development of a talented and diverse pool of trained professionals that will help advance CIRM's mission to develop stem cell therapies to meet the medical needs of our state and nation.

**Statement of Benefit to California:**

The proposed CIRM Bridges program will benefit the state of California and its residents by providing training to prepare students to enter research careers in stem cell biology and regenerative medicine. This is particularly important and timely because our state is positioned to become a leader in stem cell research and product development both nationally and globally. With this growing field it will be crucial to have skilled professionals equipped to meet the scientific and technical challenges necessary for advancing this field. We are extremely well situated to contribute to this effort. Thus far, 62 students have completed this training program since 2009. Of these students, 56% are working as research associates in biotech or in academic labs, while 21% have entered prestigious PhD programs, and 13% have entered medically-oriented training programs. Of the students that received CIRM fellowships, 60% are underrepresented minorities and 51% are women. Thus, the program has been successful in training a high caliber and diverse stem cell workforce ready for the scientific challenges that lay ahead. The CIRM Bridges program, along with other training programs in our college, have played an important role in establishing our national reputation for contributing to the diversification of the biomedical profession ready to meet the needs of an increasingly diverse society.

With the help of our partnering research institutions, our CIRM Bridges program will provide cutting edge lab and lecture courses, research internships, professional mentoring, and community service opportunities to ensure that our students possess not only scientific and technical proficiency but have a thorough grasp of the ethical implications of the technology and the ability to communicate effectively with a general as well as a scientific audience. The research internships will provide training in laboratories of premiere research institutions at the forefront of stem cell research. Students completing this program will have the knowledge, skills and experience necessary to work with both federally and non-federally registered human stem cell lines. We will also offer two new biotechnology courses that will provide students with a better understanding of how stem-cell based therapies reach the market as well as a broader understanding of the life science career paths. Our graduates will be fully prepared to contribute to the growth of a vibrant stem cell industry that is aware of the challenges and diverse needs of the patients in our state.

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